

THE CLAIMS ARE LISTED FOR THE CONVENIENCE OF THE EXAMINER:

- 1 1. An electronically tuned circuit, comprising a power amplifier coupled to an
2 electronically tunable output network, said output network including an electronically
3 tunable reactive component.
- 1 2. An electronically tuned circuit as in claim 1, wherein said output network is adapted
2 to be tuned to a selected frequency.
- 1 3. An electronically tuned circuit as in claim 1, wherein said output network is adapted
2 to be adjusted to match a selected load impedance.
- 1 4. An electronically tuned circuit as in claim 1, wherein said output network is adapted
2 to produce a modulated signal at the network output.
- 1 5. An electronically tuned circuit as in claim 4, wherein said output network is further
2 adapted to provide a power-amplifier load-impedance locus that substantially
3 maximizes power-amplifier efficiency.
- 4 6. An electronically tuned circuit as in claim 4, wherein said output network is further
5 adapted to follow a substantially resistive power-amplifier impedance locus, thereby
6 maintaining power-amplifier efficiency near maximum.
- 1 7. An electronically tuned circuit as in claim 1, wherein said output network is adapted
2 to be tuned in accordance with a predetermined set of tuning inputs.
- 1 8. An electronically tuned circuit as in claim 7, wherein said tuning inputs are selected
2 in accordance with a lookup table.

3 9. An electronically tuned circuit as in claim 1, wherein said output network is adapted
4 to be tuned in accordance with a predetermined lookup table of tuning inputs.

1 13. An electronically tuned circuit as in claim 1, wherein said electronically tunable
2 reactive component includes an electronically tunable capacitor.

1 14. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a transistor.

1 15. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a diode.

1 16. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a diode having a control terminal.

1 17. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a micro electro-mechanical system device.

1 18. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a variable-dielectric material.

1 19. An electronically tuned circuit as in claim 13, wherein said electronically tunable
2 capacitor includes a piezo-electric device.

1 28. An electronically tuned circuit as in claim 1, further comprising a controller, said
2 controller for providing a signal for controlling said electronically tunable output
3 network.

4 29. An electronically tuned circuit as in claim 28, further comprising an envelope
5 detector with an envelope-detector input and envelope-detector output, said
6 envelope-detector output coupled to the input of said controller, said envelope
7 detector being responsive to an input RF signal and providing a modulation input to
8 said controller.

1 30. An electronically tuned circuit as in claim 28, further comprising a drive-level
2 adjustor coupled for adjusting amplitude of a signal provided to said power
3 amplifier.

1 31. An electronically tuned circuit as in claim 1, further comprising a digital signal
2 processor coupled to said power amplifier and to said electronically tunable output
3 network, said processor for providing a drive signal to said power amplifier and a
4 tuning signal to said electronically tunable output network.

1 32. An electronically tuned circuit as in claim 31, further comprising a controller
2 coupled to said digital signal processor and to said electronically tunable output
3 network, wherein output of said digital signal processor is directed to said controller
4 and wherein output of said controller is directed to said electronically tunable output
5 network.

1 33. An electronically tuned circuit as in claim 1, further comprising a drive-level
2 adjustor coupled for adjusting amplitude of a signal provided to said power
3 amplifier.

1 34. An electronically tuned circuit as in claim 33, wherein said electronically tunable
2 output network and said drive-level adjuster are adapted to produce a modulated
3 signal.

1 35. An electronically tuned circuit as in claim 34, wherein said circuit is for providing a
2 desired circuit output, wherein when said desired circuit output is above a threshold
3 said electronically tunable output network is used to control amplitude and when said
4 desired circuit output is below a threshold said drive level adjuster is used to control
5 amplitude.

1 36. An electronically tuned circuit as in claim 33, further comprising a controller for
2 converting a modulation input into tuning signals for control of said electronically
3 tuned network.

1 37. An electronically tuned circuit as in claim 1, further comprising a bias input for
2 setting bias level of said power amplifier.

1 38. An electronically tuned circuit as in claim 37, wherein said bias level is adapted to
2 the minimum level necessary to enable operation of the power amplifier, thereby
3 reducing power consumption.

1 39. An electronically tuned circuit as in claim 37, further comprising a controller for
2 adjusting said bias level in response to frequency, impedance, and modulation inputs.

1 40. An electronically tuned circuit comprising:

2 (a) means for power amplifying; and

3
4 (b) means for electronic tuning of said means for power amplifying
5 coupled to said means for power amplifying.

1 41. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation for a selected frequency.

1 42. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation while delivering power
4 to a selected load impedance.

1 43. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide a reactance for optimum class-E operation while simultaneously
4 modulating the output of said electronic-tuning means.

1 44. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and further comprising a fixed reactance for optimum
3 class-E operation at a first frequency, wherein said electronic-tuning means is
4 capable of being tuned to provide said power amplifying means with a load
5 impedance for optimum class-E operation for a selected second frequency.

1 45. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and further comprising a fixed reactance for optimum
3 class-E operation with a first load impedance, wherein said electronic-tuning means
4 is capable of being tuned to provide said power amplifying means with a load
5 impedance for optimum class-E operation with a second load impedance different
6 from said first circuit load impedance.

1 46. An electronically tuned circuit as in claim 40, wherein said means for power
2 amplifying operates in class E and said electronic-tuning means is capable of being
3 tuned to provide an impedance for optimum class-E operation when the circuit is
4 delivering a maximum output signal amplitude, and said electronic-tuning means is
5 capable of being tuned to provide suboptimum class E operation when the circuit is
6 delivering less than a maximum output signal amplitude.

1 56. An electronically tuned circuit, comprising one or more power amplifiers, each of
2 said power amplifiers having an output network, said output network including a
3 tuning input, a network output, and an electronically tunable reactive component.

1 57. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to be tuned to a fixed or variable frequency.

1 58. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to be adjusted to match a fixed or variable load impedance at said network
3 output.

1 59. An electronically tuned circuit as in claim 56, wherein said output network is
2 adapted to produce a modulated signal at said network output.

- 1 60. An electronically tuned circuit as in claim 1, wherein said output network includes at
2 least two reactive components connected as a tuned circuit, wherein at least one of
3 said reactive components is adapted to being electronically tuned by a tuning signal.
- 1 61. An electronically tuned circuit as in claim 28, wherein said controller converts an
2 input signal to a voltage suitable for controlling said tunable output.